

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/684,950
				Filing Date	October 13, 2003
				First Named Inventor	Michael A. Horton
				Art Unit	Not yet known
				Examiner Name	Not yet known
Sheet	1	of	4	Attorney Docket Number	18856-08206

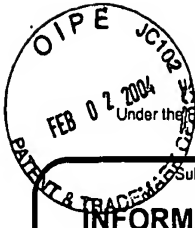
U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No. ¹	Document No. Number - Kind Code ² (if known)	Date MM-YYYY	Name of Patentee or Applicant of Cited Document
	A1	US-4,038,876	08-1977	Horton
	A2	US-4,134,681	01-1979	Elmer
	A3	US-4,318,300	03-1982	Maughmer
	A4	US-4,399,692	08-1983	Hulsing, II <i>et al.</i>
	A5	US-4,454,756	06-1984	Sharp <i>et al.</i>
	A6	US-4,827,624	05-1989	Franklin <i>et al.</i>
	A7	US-4,914,598	04-1990	Krogmann <i>et al.</i>
	A8	US-5,031,330	07-1991	Stuart
	A9	US-5,148,604	09-1992	Bantien
	A10	US-5,172,323	12-1992	Schmidt
	A11	US-5,210,954	05-1993	Schafner
	A12	US-5,237,753	08-1993	Carlson <i>et al.</i>
	A13	US-5,241,850	09-1993	Kawate
	A14	US-5,287,628	02-1994	Yamaguchi <i>et al.</i>
	A15	US-5,335,190	08-1994	Nagle <i>et al.</i>
	A16	US-5,351,539	10-1994	Ziegenbein <i>et al.</i>
	A17	US-5,381,604	01-1995	Heidel <i>et al.</i>
	A18	US-5,392,112	02-1995	Nakamura
	A19	US-5,400,033	03-1995	Hablani
	A20	US-5,615,132	03-1997	Horton <i>et al.</i>
	A21	US-5,819,206	10-1998	Horton <i>et al.</i>
	A22	US-6,061,611	05-2000	Whitmore
	A23	US-6,088,653	07-2000	Sheikh <i>et al.</i>
	A24	US-6,176,837	01-2001	Foxlin
	A25	US-6,205,401	03-2001	Pickhard <i>et al.</i>

Examiner Signature		Date Considered	27 MAY 2004
-----------------------	--	--------------------	-------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

18856/08206/DOCS/1407988.1



PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0851-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1448A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/684,950
				Filing Date	October 13, 2003
				First Named Inventor	Michael A. Horton
				Art Unit	Not yet known
				Examiner Name	Not yet known
Sheet	2	of	4	Attorney Docket Number	18856-08206

U.S. PATENT DOCUMENTS				
Examiner Initials*	Cite No. ¹	Document No. Number - Kind Code ² (if known)	Date MM-YYYY	Name of Patentee or Applicant of Cited Document
m	A26	US-6,421,622	07-2002	Horton et al.

FOREIGN PATENT DOCUMENTS					
		Foreign Patent Document			
Examiner Initials*	Cite No. ¹	Country Code ³ – Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶

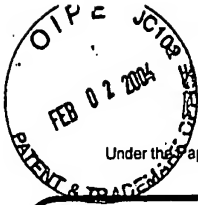
OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶	
pm	C1	Chung, D. et al., "Strapdown INS Error Model for Multiposition Alignment," IEEE Transactions on Aerospace and Electronic Systems; Vol. 32, No. 4; Oct. 1996; pp. 1362-1366.		
↑	C2	Randle, J. et al.; "Low Cost Navigation Using Micro-Machined Technology," IEEE Conference on Intelligent Transportation System; 1997, p. 1064-1067.		
↓	C3	Creamer, G. et al.; "Attitude Determination and Control of Clementine During Lunar Mapping," Journal of Guidance Control and Dynamics, Vol. 19, No. 3; May-June 1996; pp. 505-511.		
↓	C4	Mehra, R. et al.; "Adapting Kalman Filtering, Failure Detection and Identification for Spacecraft Attitude Estimation," Proceedings of 4 th IEEE Conference on Control Applications; 1995, pp. 176-181.		
pm	C5	ADXL50/ADXL05 Evaluation Modules, Analog Devices, Inc., 1996, 2 pages.		

Examiner Signature	<i>Dylan W. Winkler</i>	Date Considered	27 MAY 2004
--------------------	-------------------------	-----------------	-------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

18856/08206/DOCS/1407988.1



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0851-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/684,950
				Filing Date	October 13, 2003
				First Named Inventor	Michael A. Horton
				Art Unit	Not yet known
				Examiner Name	Not yet known
				Attorney Docket Number	18856-08206
Sheet	3	of	4		

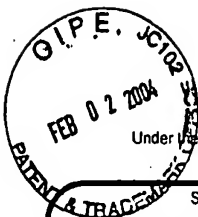
OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published		T ²
mw ↑ ↓ mw	C6	Aramanovitch, L. et al; "Quaternion Non-Linear Filter for Estimation of Rotating Body Attitude," Mathematical Methods in the Applied Sciences, Vol. 18, No. 15; Dec. 1995, pp. 1239-1255.		
	C7	Bar-Itzhack, et al.; "Recursive Attitude Determination From Vector Observations: Direction Cosine Matrix Identification," Journal of Guidance Control and Dynamics, Vol. 7, No. 1; Jan.-Feb. 1984, p. 51-56.		
	C8	Berman, Z.; "On Range and Attitude Estimation," IEEE Position Location and Navigation Symposium; Apr. 11-15, 1994, pp. 344-347.		
	C9	Guo-Shing-Huang, et al.; "Application of Nonlinear Kalman Filter Approach in Dynamic GPS-Based Attitude Determination," Proceedings of 40 th Midwest Symposium on Circuits and Systems, Vol. 2; Aug. 3-6, 1997, pp. 1440-1444.		
	C10	Gusinsky, V. et al; "New Procedure for Deriving Optimized Strapdown Attitude Algorithms," Journal of Guidance Control And Dynamics, Vol. 20, No. 4; July-Aug. 1997, pp. 673-680.		
	C11	Jiang, Y. et al.; "Error Analysis of Quaternion Transformations," IEEE Transactions on Aerospace and Electronic Systems; Vol. 27, No. 4; July 1991, pp. 634-639.		
	C12	Markley, F., et al. "Deterministic EKFLike Estimator for Spacecraft Attitude Estimation," Proceedings of 1994 American Control Conference, Vol. 1; pp. 247-251.		
	C13	McKern, R. et al.; "Strapdown Attitude Algorithms From a Geometric Viewpoint," Journal of Guidance Control and Dynamics, Vol. 4, No. 6; Nov.-Dec. 1981; pp. 657-661.		
	C14	Moskowitz, L.; "Part I: Measurement of Applied Acceleration-Accelerometer Calibration," Instruments & Control Systems; Feb. 1961, pp. 257-260.		

Examiner Signature	<i>D. M. Muhl</i>	Date Considered	27 May 2004
--------------------	-------------------	-----------------	-------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

18856/08206/DOCS/1407988.1



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0851-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Application No.	10/684,950
				Filing Date	October 13, 2003
				First Named Inventor	Michael A. Horton
				Art Unit	Not yet known
				Examiner Name	Not yet known
Sheet	4	of	4	Attorney Docket Number	18856-08206

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published		
	C15	Reynolds, R.; "Quaternion Parameterization and a Simple Algorithm for Global Attitude Estimation," Journal of Guidance Control and Dynamics, Vol. 21, No. 4; Jul.-Aug. 1998, pp. 669-671.		
	C16	Savage, P.; "Strapdown Inertial Navigation Integration Algorithm Design Part 1: Attitude Algorithms," Journal of Guidance Control and Dynamics, Vol. 21, No. 1; Jan.-Feb. 1998; pp. 19-28.		
	C17	Schultz, R. et al.; "Airborne IRP Alignment Using Acceleration and Angular Rate Matching," 14 th Joint Automatic Control Conference of the American Control Council; June 1972, pp. 427-436 (1-7).		
	C18	Vathsal, S. et al.; "Spacecraft Attitude Determination Using a Second-Order Nonlinear Filter," Journal of Guidance Control and Dynamics, Vol. 10, No. 6; Nov.-Dec. 1987, pp. 559-566.		
	C19	Weiss, H.; "Quaternion Based Rate/Attitude Tracking System With Application to Gimbal Attitude Control," Proceedings IEEE Conference on Control and Applications; 1989, pp. 488-494.		
aw	C20	Wu, A. et al.; "Stellar Inertial Attitude Determination for LEO Spacecraft," Proceedings of 35 th IEEE Conference on Decision and Control; Vol. 3, No. 11-13; Dec. 1996, pp. 3236-3244.		

Examiner Signature		Date Considered	27 May 2004
--------------------	--	-----------------	-------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

18856/08206/DOCS/1407988.1